NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

WINDBREAK/SHELTERBELT ESTABLISHMENT
(feet)
CODE 380

DEFINITION

Linear plantings of single or multiple rows of trees or shrubs or sets of linear plantings.

PURPOSES

Establishment of trees and/or shrubs to modify environmental conditions. Environmental modifications can include one or more of the following:

- Reduce soil erosion from wind.
- Protect plants from wind-related damage.
- Alter the microclimate to enhance plant growth.
- Manage snow deposition.
- Provide shelter for structures, livestock, and recreational areas.
- Provide or enhance wildlife habitat or travel corridors.
- Provide a tree or shrub product.
- Provide living noise screens.
- Provide living visual screens.
- Provide living barriers against airborne chemical drift.
- Delineate property and field boundaries.
- Improve irrigation efficiency.

CONDITIONS WHERE PRACTICE APPLIES

On any areas where woody plants are desired.

CRITERIA

General Criteria Applicable To All Purposes

The location, layout and density of the planting will accomplish the purpose and functions intended within a 20-year period.

The maximum design height (H) for the windbreak or shelterbelt shall be the expected height of the tallest row of trees or shrubs at age 20 for the given site.

Species must be adapted to the soils, climate and site conditions.

Species shall be suited for the planned practice purposes(s).

Site preparation shall be sufficient for establishment and growth of selected species and appropriate for the site.

Only viable, high quality and adapted planting stock or seed will be used.

The planting shall be done at a time and manner to ensure survival and growth of selected species.

Avoid planting trees or shrubs where they will interfere with structures or any above or below ground utilities.

Moisture conservation or supplemental watering shall be provided for plant establishment and growth where natural precipitation is too low for the selected species.

Comply with applicable laws and regulations, including the state's Best Management Practices (BMPs).

Additional Criteria To Reduce Wind Erosion And To Protect Growing Plants

The windbreak will be oriented as close to perpendicular to the troublesome wind as possible. The interval between windbreaks shall

be determined using current, approved wind erosion technology to achieve the quality level for the soil or plant resource. The wind erosion control system should consider temporary measures to supplement the windbreak until it is fully functional.

Plants are protected within an area 10 times the design height (H) on the leeward side and two times the design height (H) on the windward side of the windbreak.

Additional Criteria To Manage Snow Deposition

The windbreak will be oriented as close to perpendicular to the snow-bearing wind as possible.

For snow distribution across a field, the minimum windbreak density will be 25 percent, and the maximum windbreak density will be 65 percent. The interval between barriers will not exceed 20H.

For snow accumulation, the minimum barrier density will be 50 percent.

Windbreaks will be located so that snow deposition will not adversely impact the area to be protected.

Additional Criteria To Provide Shelter For Structures, Livestock And Recreational Areas

The planting will be oriented as close to perpendicular to the troublesome wind as possible.

For wind protection, the minimum barrier density will be 65 percent, and the area to be protected will fall within 10H.

Drainage of snowmelt from the windbreak shall not flow across the feedlot.

Drainage of livestock waste from the feedlot shall not flow into the windbreak.

Additional Criteria For Noise Screens

Noise screens shall be at least 65 percent dense and as tall as and as close to the noise source as practicable.

The length of the noise screen should be twice as long as the distance from the noise source to the receiver.

For high-speed traffic noise, the barrier should be 65 to 100 feet wide. For moderate speed traffic noise, the barrier width can be 20 to 25 feet.

Additional Criteria For Visual Screens

Visual screens shall be located as close to the observer as possible.

Additional Criteria For Providing or Enhancing Wildlife habitat or Travel Corridors

Plant species selection shall benefit targeted wildlife species.

Design dimensions of the planting shall be adequate for targeted wildlife species.

Additional Criteria For Improving Irrigation Efficiency

For sprinkler irrigation systems, the windbreak shall be as tall as the sprinkler heads.

The barrier shall not interfere with the operation of the irrigation system.

CONSIDERATIONS

Spacing between windbreaks and rows of windbreaks may be adjusted, within the limits of the criteria above, to accommodate widths of equipment.

To enhance aesthetics use species that are evergreen or have other unique winter

characteristics or have desirable features such as showy flowers, brilliant fall foliage, or persistent colorful fruits.

Selection of plants for use in windbreaks should favor species or varieties tolerant to herbicides used in the area.

Plants that may be alternate hosts to undesirable pests should be avoided.

All plants should complement natural features.

Tree or shrub rows should be oriented on or near the contour where water erosion is a concern. Where water erosion and/or runoff from melting snow is a hazard, it should be controlled by supporting practices.

Wildlife should be considered when selecting tree or shrub species.

Species diversity should be considered to avoid loss of function due to species-specific pests.

Consideration should be given to adverse offsite effects.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specifications sheets, job sheets, technical notes, narrative statements in the conservation plan or other acceptable documentation.